

## National Environmental Policy Act

The Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

## Reference Cited

- Greenbaum, I.F., and C.J. Phillips. 1974. Comparative anatomy and general histology of tongues of long-nosed bats (*Leptonycteris sanborni* and *L. nivalis*) with reference to infestation of oral mites. J. Mamm. 55:489-504.
- Hall, E.R. 1981. The mammals of North America. John Wiley & Sons, New York, 2 vols.
- Hayward, B.J., and E.L. Cockrum. 1971. The natural history of the western long-nosed bat *Leptonycteris sanborni*. Western New Mexico Univ. Res. Sci. 1:75-123.
- Howell, D.J. 1974. Bats and pollen: physiological aspects of the syndrome of chiropterophily. Comp. Biochem. Physiol. 48A:263-276.
- Howell, D.J. 1976. Plant-loving bats, bat-loving plants. Nat. Hist. 85(2):52-57.
- Howell, D.J., and N. Hodgkin. 1976. Feeding adaptations in the hairs and tongues of nectar-feeding bats. J. Morphol. 148:329-336.
- Howell, D.J., and B.S. Roth. 1981. Sexual reproduction in agaves: the benefits of bats: the cost of semelparous advertising. Ecology 62:1-7.
- Jones, J.K., Jr. 1966. Bats from Guatemala. Univ. Kansas Publ. Mus. Nat. Hist. 16:439-472.
- Jones, J.K., Jr., and W.J. Bleier. 1974. Sanborn's long-tongued bat, *Leptonycteris sanborni*, in El Salvador. Mammalia 38:144-145.
- Nowak, R.M., and J.L. Paradiso. 1983. Walker's mammals of the world. Johns Hopkins Univ. Press, Baltimore, 2 vols.
- Reichenbacher, F.W. 1985. Conservation of southwestern agaves. Desert Plants 7:103-107.
- Wilson, D.E. 1985a. Status report: *Leptonycteris nivalis* (Saussure). Mexican long-nosed bat. Rept. to U.S. Fish and Wildl. Serv., Albuquerque, 33 pp.
- Wilson, D.E. 1985b. Status report: *Leptonycteris sanborni* Hoffmeister. Sanborn's long-nosed bat. Rept. to U.S. Fish and Wildl. Serv., Albuquerque, 35 pp.
- Wilson, D.E., D.V. Lanning, and R.A. Medellin. 1985. Bats from northeastern Mexico, with a checklist of species. U.S. Fish and Wildl. Serv., Museum Section, Washington, D.C., 30 pp.

## Author

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9A33, 819 Taylor St., Fort Worth, Texas 76102 (817/334-2961 or FTS 334-2961).

## List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

## Regulations Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

## PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "MAMMALS," to the List of Endangered and Threatened Wildlife:

## § 17.11 Endangered and threatened wildlife.

(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
Bat, Mexican long-nosed .....	<i>Leptonycteris nivalis</i> .....	U.S.A. (NM, TX), Mexico, Central America.	Entire .....	E	336	NA	NA
Bat, Sanborn's long-nosed .....	<i>Leptonycteris sanborni</i> (= <i>L. yerbabuena</i> ).	U.S.A. (AZ, NM), Mexico, Central America.	Entire .....	E	336	NA	NA

Dated: September 22, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88-22330 Filed 9-29-88; 8:45 am]

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## 50 CFR Part 17

## Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Shasta Crayfish

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines the Shasta (placid) crayfish (*Pacifastacus fortis*) to be an endangered species. This species

occurs only in Shasta County, California, within the Pit River drainage system including tributaries of the Hat Creek and Fall River subdrainages. This crayfish is a slow-maturing, relatively long-lived, passive species with low fecundity. Its preferred habitat is spring-fed lakes and slowly to moderately flowing cool rivers and streams. These waters typically have low turbidity, few suspended particles, excellent water quality, little vegetation, and adequate rubble substrate. The Shasta crayfish is uncommon and the overall population



could number fewer than 3,000 individuals located in the Fall River and Hat Creek subdrainages. A survey conducted in 1985 by the California Department of Fish and Game (CDFG) showed that the Shasta crayfish has been extirpated from approximately one-half of its known range since 1978. Throughout the approximate remaining 2,000 acres of habitat, the Shasta crayfish is endangered by: competition for food and space with two aggressive, adaptive, exotic crayfish species; agricultural development; increased residential development; and aquatic habitat loss because of water diversion and impoundment projects. Continued habitat loss and degradation present substantial threats to the existence of this crayfish. This rule implements the protection provided under the Endangered Species Act of 1973, as amended (Act), for the Shasta crayfish.

**EFFECTIVE DATE:** October 31, 1988.

**ADDRESSES:** The complete file for this rule is available for inspection, by appointment, during normal business hours at the Endangered Species Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E-1623, Sacramento, California 95825.

**FOR FURTHER INFORMATION CONTACT:** Mr. Gail C. Kobetich, Field Supervisor, Endangered Species Office, at the above address (916/978-4866 or FTS 460-4866).

**SUPPLEMENTARY INFORMATION:**

**Background**

The Shasta crayfish [*Pacifastacus fortis* (Faxon)] is a decapod crustacean of the family Astacidae. William Faxon (1914) originally described this crayfish as *Astacus nigrescens fortis* from specimens taken from Fall River and Hat Creek near Cassel in 1898. Bott (1950) revised the subfamily Astacinae, creating the new genus *Pacifastacus*, which contained most of the western North American species of the subfamily. Bott (1950) limited the members of the genus *Astacus* to the Eurasian species. Bouchard (1977a) subdivided the genus *Pacifastacus* into two subgenera, *Pacifastacus* and *Hobbsastacus*. *Pacifastacus fortis*, which Hobbs (1972) elevated to a species, belongs to the subgenus *Hobbsastacus*.

Adult Shasta crayfish are small- to medium-sized crayfish which may reach 25 to 50 millimeters (1-2 inches) total length of the carapace (shell covering the back over the walking legs). The color is variable and may range from dark brownish-green to dark brown on the topside and bright orange on the underside. Occasional blue-green to light blue individuals are found in

isolated populations (McGriff, personal communication 1986). These blue crayfish have a light salmon color on their undersides. Members of the Fall River population are dark orange-brown on the topside and bright red on the underside, especially on the chelae (pinchers) (Eng and Daniels 1982). These colors (except the blue) provide camouflage for the crayfish among the volcanic rubble substrates of its habitat.

The adults of *P. fortis* are sexually dimorphic and can easily be distinguished because the males have narrower abdomens and larger chelae than the females. The first two pair of swimmerets (tiny swimming legs) of the males are hard and modified for sperm transfer to the female during mating. These notable sexual characteristics can be seen in young larvae that are less than 11 millimeters (.4 inches) in total carapace length (Eng and Daniels 1982).

*Pacifastacus fortis* is found only in Shasta County, California, in the Pit River drainage and two tributary systems, Fall River and Hat Creek subdrainages. In the Hat Creek subdrainage, populations have been found in Lost Creek and in Crystal, Baum, and Rising River Lakes. In the Fall River subdrainage, populations occur in the following bodies of water: Fall River; Big Lake (Horr Pond); Bit Tule River; Spring, Mallard, Squaw, and Lava Creeks; and in Crystal, Thousand, and Rainbow Springs. An additional population was extirpated in Sucker Spring Creek, a tributary of the Pit River at Powerhouse 1, which lies between the two subdrainages (Bouchard 1978, Eng and Daniels 1982). The populations in Lake Britton, and in Burney, Clark, Kosk, Goose, Lost, and Rock Creeks were extirpated prior to 1974 (Bouchard 1977b). Since 1978, the Shasta crayfish has been extirpated from Baum Lake and Spring Creek near its confluence with the Pit River (Darlene McGriff CDFG, personal communication 1986).

Daniels (1980) reported the relative density of *P. fortis* in Crystal Lake as 6.89 crayfish per square meter versus 0.09 crayfish per square meter for Baum Lake in 1978. He also reported an average density of 3.81 crayfish per square meter for the introduced signal crayfish (*Pacifastacus leniusculus*) in Baum Lake. Although Daniels observed one gravid signal crayfish in Crystal Lake, this exotic was not considered established at that time, and a density estimate was not calculated for it at this site. The signal crayfish is a known competitor of the Shasta crayfish and seemingly was responsible for the low density of the native crayfish in Baum Lake. Recent surveys (1986) by CDFG confirmed the loss of the Shasta crayfish

population in Baum Lake and a large decline in numbers in Crystal Lake, and attributed these changes to the establishment of exotic crayfish.

During 1985 and 1986, surveys revealed that most Shasta crayfish were found in the Fall River subdrainage (McGriff, personal communication 1986). At the Spring Creek confluence with the Pit River, *P. leniusculus* and a second exotic crayfish species, *Orconectes virilis* were present, but there were no *P. fortis* in 1985 (McGriff, personal communication 1986). In a few locations, the Shasta crayfish occurs sympatrically with both exotic species; however, it is much less common at these sites. It is not known if the Shasta crayfish and the two exotic crayfish species can coexist permanently. Cases of apparent sympatry may be the result of Shasta crayfish having washed down from upstream populations and may not reflect coexisting breeding populations. All distributional information indicates that these two exotic species can outcompete native species (Bouchard 1977, Riegel 1959, Schwartz *et al.* 1963).

Shasta crayfish occur in cool, clear, spring-fed lakes, rivers, and streams, usually at or near a spring inflow source, where waters show relatively little annual fluctuation in temperature and remain cool during the summer. Most are found in lentic and slowly to moderately flowing waters. Although Shasta crayfish have been observed in groups under large rocks situated on clean, firm sand or gravel substrates (Bouchard 1978, Eng and Daniels 1982), they also have been observed on a fine, probably organic, material 1-3 centimeters (.4 to 1/2 inches) thick on the bottom of Crystal Lake. *Pacifastacus fortis* is most abundant where plants are absent. Another important habitat requirement appears to be the presence of adequate volcanic rock rubble to provide escape cover from predators.

Although the food habits of the Shasta crayfish are not well known, the morphology of the mouthparts suggests that the species relies primarily on predation, browsing on encrusting organisms, and grazing on detritus to obtain food. Aquatic invertebrates and dead fish probably provide food for the crayfish, although its main food source is unknown. Unlike most crayfish that feed during the day, the Shasta crayfish probably feeds mainly at night (Eng and Daniels 1982).

*P. fortis*, like most crayfish, is solitary, but may tolerate the proximity of other crayfish if space is limited or during courtship and mating. Similar to its congeners in its mating habits, the Shasta crayfish mates in late September



and October after the final molt (loss of previous skin and the growth of a new larger skin) of the season. Reproductive maturity of the Shasta crayfish occurs in the fifth year of life, while in the two exotic crayfish species that occur within the range, reproductive maturity occurs in the second year. Eggs of the Shasta crayfish are laid during the fall, and hatching occurs in the following spring when the water temperature increases slightly. Each newly mature mated female lays 10-70 eggs, with an average of 40 per female. The two exotic crayfish, *Orconectes virilis* and *Pacifiastacus leniusculus*, average 110 and 150 eggs, respectively, per female. In general, crayfish fecundity increases with the age of the female; older *P. fortis* females produce an average of 60 eggs per female, whereas the exotic species produce up to 200-300 eggs per female. Therefore, the introduced crayfish species have a reproductive advantage over the Shasta crayfish (Eng and Daniels 1982).

Because of its placid behavior, low fecundity, slow maturity, restricted distribution, and specialized habitat requirements, the Shasta crayfish is particularly vulnerable to habitat loss or modification (e.g., changes in the substrates (from rubble to mud bottoms) resulting from siltation caused by increased erosion of its habitat, changes in water quality parameters (increase in temperature, turbidity, hydrogen ions, and nutrients)), water pollution, and displacement by exotic crayfish species. Other threats to the survival of this species include habitat loss through modifications from diking, dredging, water diversion projects, hydroelectric projects, agricultural development, water impoundments, and increased residential development. All these habitat modifications seem to favor the two exotic species which, as discussed above, have a great reproductive advantage over the Shasta Crayfish. A more subtle threat to the Shasta crayfish is the overall increase in human use of the area for outdoor recreational purposes. For example, off-road vehicle trails that cross creeks can cause bank erosion and siltation that degrade the habitat. Fishing with exotic crayfish bait may result in introductions of additional exotic competitors.

Most of the land in the range of the Shasta crayfish is in private ownership. The U.S. Forest Service and the Bureau of Land Management administer less than 10 acres each of the Shasta crayfish habitat. The State owns the 5,890 acre Ahjumawi Lava Springs State Park that includes about 10 acres of

Shasta crayfish habitat in the Fall River drainage.

The Shasta crayfish (under the common name of "placid crayfish") was proposed as a threatened species on January 12, 1977, in the Federal Register (42 FR 2507). Comments expressing support for the proposal were received from the CDFG and two private organizations. That proposal was withdrawn on December 10, 1979 (44 FR 70796), under a provision of the 1978 amendments to the Act that required withdrawal of all pending proposals that were not made within 2 years of the date of the proposal.

The Shasta crayfish was included in category 1 of the Service's Review of Invertebrate Wildlife for Listing and Endangered or Threatened Species (49 FR 21666; May 22, 1984). Category 1 comprises taxa for which the Service has substantial evidence to support the biological appropriateness of proposing endangered or threatened status. In that notice, the Service, following the suggestion of Eng and Daniels (1982), used the common name Shasta crayfish rather than placid crayfish, the name used in the earlier proposal of threatened status.

In the summer of 1978, the CDFG and the U.S. Forest Service initiated studies to further determine the distribution of *P. fortis* and gather biological and ecological information necessary for its conservation (see Eng and Daniels 1982). The maps of the distribution of the Shasta crayfish generated in 1979 by CDFG were amended from information gained during a 1985 survey of the distribution and population status of the crayfish. These updated maps and additional data constitute significant new information on which to make a determination of endangered status for the Shasta crayfish.

In the Federal Register of July 10, 1987 (52 FR 26036), the Service proposed the Shasta crayfish as an endangered species. A notification extending the comment period beyond September 8, 1987, to November 8, 1987, was published in the Federal Register (52 FR 22979) on September 9, 1987.

#### Summary of Comments and Recommendations

In the July 10, 1987, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in the *Record*

*Searchlight* (September 3, 1987) and the *News* (September 3, 1987), both of which invited general public comment.

During the comment period, totalling approximately 4 months, eight comments on the listing were received. Two additional comments were received after the close of the comment period and are noted as ex parte communications. Of the 10 letters of comment, 5 supported listing (two state agencies, one conservation organization, and two private citizens) and 2 did not (two private citizens); 3 offered no substantive information (two Federal agencies and one private citizen).

Support for the listing proposal was expressed by a conservation organization and two other interested parties. Ex parte comments from the CDFG and California Department of Parks and Recreation supported the listing and presented additional status information on the crayfish. Opposing comments and other comments questioning the rule can be placed in a number of general groups. These categories of comments and the Service's response to each are listed below.

**Comment 1:** Two questions from private citizens were raised pertaining to the available biological information on the crayfish. Have there been recent studies to determine that the species is continuing to decline? A request was made to conduct more studies on the species to determine if the crayfish is really endangered. One commenter stated that crayfish are abundant in irrigation canals. A commenter stated that the Shasta crayfish has made a comeback in the last 3 years. Concern was expressed about the possibility of a premature listing.

**Service response:** The Service finds that surveys conducted between the 1960's and 1987 by qualified biologists familiar with the Shasta crayfish and its habitats provide adequate information on the distribution, habitat requirements, and most importantly, threats to the species to warrant the present action for the Shasta crayfish (See discussion under Factor A). Further studies on the distribution and actual numbers would consume additional time during which the crayfish would not be Federally protected. Pertinent studies on the habitat requirements of the crayfish are listed in the References Cited section of the proposed rule and the final rule. In some cases, the data were supplied by personal communications with field biologists and are noted in the text. The State of California, recognizing the decline in the Shasta crayfish, listed it as rare in 1980, and reclassified it as



endangered in 1987. The species continues to lose habitat and decline in distribution and population size. Therefore, based on the available information regarding the status of the Shasta crayfish, the Service believes immediate listing is warranted.

The numerous "crawdads" observed by one private citizen in the rice field drainage ditches and other degraded habitats, are not likely to be the Shasta crayfish but rather one or both species of exotic competitors. The Shasta crayfish cannot tolerate pollutants such as those that would be expected in agricultural drainage canals. In contrast, the competitors appear to thrive in nutrient enriched habitats. In the Background and Factors Affecting the Species sections, the biological and habitat requirements of the Shasta crayfish are described more fully.

**Comment 2:** One commenter (a private landowner) stated his belief that the Shasta crayfish was proposed for listing only to enable the CDFG to gain control of the Fall River and its tributaries.

**Service response:** The decision to list the species must be based on the best available biological information on the status of the Shasta crayfish. A species must qualify under at least one of the five factors specified in the Endangered Species Act to be listed. Furthermore, the Shasta crayfish was proposed for listing only because the Service believed the species met the requirements for endangered status as specified by the Act, and for no other reason.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Shasta crayfish (*Pacifastacus fortis*) should be classified as an endangered species. Procedures found at section 4(a)(1) of the Act (16 U.S.C. 1531 et seq.), and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Shasta crayfish (*Pacifastacus fortis*) are as follows:

**A. The present or threatened destruction, modification, or curtailment of its habitat or range.** The total population of Shasta crayfish, when sampled in 1978 by Daniels (1980), was estimated to be fewer than 6,000 individuals. With the recent confirmed loss of the population in Baum Lake and the large decline in Crystal Lake of the Hat Creek subdrainage, the total

population probably numbers fewer than 3,000 individuals. It has also been extirpated from a site in the Fall River subdrainage near its connection to the Pit River. At the present rate of extirpation, with at least three out of 15 sites being lost since 1978 and possibly only one site remaining in the Hat Creek subdrainage, it is conceivable that very shortly the Shasta crayfish may become restricted only to the Fall River subdrainage.

Water diversion and impoundment projects have adversely affected the Shasta crayfish by modifying the habitat into large quiet lakes with silt and mud bottoms and an increase in aquatic vegetation. These modifications have made the habitat more suitable for the two exotic crayfish species than the Shasta crayfish. The exotic species have done very well in these areas, and have displaced the Shasta crayfish. Lake Britton, and Baum and Crystal Lakes are examples of areas where these types of habitat modifications have led to the displacement of the Shasta crayfish in recent times.

Numerous hydroelectric projects have been constructed on Hat Creek and the Pit River since the early part of the century. Lake Britton and Baum Lake are manmade reservoirs used for hydroelectric power production, water impoundment, and recreation. These installations have adversely affected the Shasta crayfish by blocking access and egress to refugia in the remaining spring pools. These refugia formerly served as sources of immigrant individuals for re-establishing populations that had become locally extirpated from suitable habitat as the result of natural events (i.e., flooding, landslides, and log or debris jams). These manmade dam installations isolate and separate Shasta crayfish populations to such an extent that when habitats become available, they are unable to recolonize them.

Agricultural development and more recently residential development within the range of the Shasta crayfish have increased demands on the water resources, thus lowering the water table and causing seasonal interruptions of spring flow. This has occurred on some of the small unnamed tributaries of Fall River and Hat Creek (R. Brown, CDFG, personal communication, 1986). Increased residential development on Fall River, including the headwater spring areas at Lava Creek, is resulting in increased human use of the area and associated pollution that may adversely affect the crayfish (CDFG, letter dated November 23, 1987). In conjunction with the increase in water usage, an extensive, diverse agricultural industry has caused an increase in the use of

pesticides in the area. These pesticides, when washed into the waterways, can kill aquatic invertebrates directly or over a period of time by bioaccumulation.

Livestock grazing near watercourses also leads to increased turbidity in some of the streams. Turbidity inhibits the penetration of sunlight to lower depths of the spring pools, where it promotes the growth of encrusting organisms on which the crayfish feeds. This increase in murkiness of the water also causes an increase in predation because the Shasta crayfish is unable to detect predators. Pasture runoff increases the nutrients in the streams, thus increasing planktonic (free-floating) algal and aquatic macrophyte growth. Because Shasta crayfish prefer areas with sparse plant growth, these areas become less suitable for the crayfish. Further, such conditions encourage invasion by the two exotic crayfish species that outcompete the Shasta crayfish.

**B. Overutilization for commercial, recreational, scientific, or educational purpose.** The incidental capture of Shasta crayfish for human consumption may occur. Although the Shasta crayfish is not the target of the catch, it is extremely vulnerable to such pressures because of its placid behavior. Its low fecundity, and long maturation period will result in low recruitment.

**C. Disease or predation.** Not applicable.

**D. The inadequacy of existing regulatory mechanisms.** In 1980, the California State Fish and Game Commission listed the Shasta crayfish as a rare species under State law. It was reclassified as endangered in 1987, thus offering protection from take, possession, or sale within the State of California. Other State regulations prohibit the take, possession, or use for bait of any crayfish species at any time of year within the range of *P. fortis*. These regulations were enacted to protect the Shasta crayfish and prevent the spread of exotic crayfish by unintentional introductions. Because of the large size and remoteness of the area, these regulations are difficult to enforce.

**E. Other natural or manmade factors affecting its continued existence.** The spread of the two exotic crayfish species, *Pacifastacus leniusculus* and *Orconectes virilis*, into the range of the Shasta crayfish continues at an alarming rate. Both species are recent introductions to the Pit River drainage (Daniels 1980). These species compete for food, space, and other resources with the Shasta crayfish. Because they are more fecund and mature much faster



than the Shasta crayfish, and have less specific habitat requirements, the exotic crayfish have been successful in colonizing the modified habitat and in displacing the Shasta crayfish. Since *O. virilis* is probably able to move overland under conditions of high humidity, it may invade the Fall River as it has Hat Creek. Both exotic species have displaced native species in other regions (Bouchard 1977a,b; Riegel 1959; Schwartz *et al.* 1963). If the habitat of *P. fortis* continues to be degraded and becomes better suited for the exotic species, the Shasta crayfish may be displaced from its remaining habitat in the near future. With the introduction of the exotic crayfish, the populations of Shasta crayfish in Crystal and Baum Lakes, Lake Britton, Clark, Rock, Goose, Kosk, Lost, and Spring Creeks have been lost, thus significantly reducing the limited range of the native crayfish. These extirpations occurred in less than 10 years.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list the Shasta crayfish as endangered. Its significantly reduced distribution, competition from exotic crayfish species, loss of habitat, and substantial potential for continued habitat modification or loss indicate that the species warrants endangered rather than threatened status. Critical habitat is not being designated for the species at this time for the reasons discussed below.

#### Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the Shasta crayfish at this time. As discussed under Factors D and E in the "Summary of Factors Affecting the Species," State laws to protect the Shasta crayfish from taking and from introductions of exotic crayfish species are difficult to enforce. Publication of critical habitat descriptions and maps in the Federal Register would make this species and its habitats more vulnerable to possible taking and vandalism and would increase enforcement problems. All involved parties and landowners will be notified of the locations and importance of protecting this species' habitat. Protection of the habitat of the Shasta

crayfish will be addressed through the recovery and Section 7 consultation processes. Therefore, it would not be prudent to determine critical habitat for the Shasta crayfish at this time.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. Some Federal involvement with the U.S. Army Corps of Engineers and the Federal Energy Regulatory Commission (FERC) permitting processes for hydroelectric facilities is anticipated. Federal involvement with the Soil Conservation Service bank protection and repair projects addressing damage caused by cattle grazing is expected.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been

taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be suffered if such relief were not available.

#### National Environmental Policy Act

The Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

#### References Cited

- Bott, R. 1950. Die flusskrebse Europas (Decapoda, Astacidae). Abhandlungen Senckenbergischen Naturforschenden Gesellschaft 483: 1-36.
- Bouchard, R.W. 1977a. Distribution, systematic status, and ecological notes on five poorly known species of crayfish in western North America (Decapoda: Astacidae and Cambaridae). Freshwater Crayfish 3:409-423.
- Bouchard, R.W. 1977b. Morphology of the mandible in Holarctic crayfishes (Decapoda: Astacidae and Cambaridae): Ecological and phylogenetic implications. Freshwater Crayfish 3:425-452.
- Bouchard, R.W. 1978. Taxonomy, distribution, and general ecology of the genera of North America crayfishes. Fisheries 3:11-19.
- Daniels, R.A. 1980. Distribution and status of crayfishes in the Pit River drainage, California. Crustaceana 38:131-138.
- Eng, L.L., and Daniels, R.A. 1982. Life history, distribution, and status of *Pacifastacus fortis* (Decapoda: Astacidae). California Fish and Game 68:197-212.
- Faxon, W. 1914. Notes on the crayfishes in the United States National Museum and the Museum of Comparative Zoology with descriptions of new species and subspecies to which is appended a catalogue of the known species and subspecies. Memoirs of the Museum of Comparative Zoology. (Harvard) 40: 351-427.
- Hobbs, H.H. 1972. Crayfishes (Astacidae) of North and Middle America. Identification Manual No. 9 in Biota of Freshwater Ecosystems. U.S. Environmental Protection Agency, Water Pollution Control Research Series. 18050, ELD05/72. 173 pp.



- Riegel, J.A. 1959. The systematics and distribution of crayfishes in California. *California Fish and Game* 45:29-50.
- Schwartz, F.J., R. Rubelmann, and J. Allison. 1963. Ecological population expansion of the introduced crayfish, *Orconectes virilis*. *Ohio Journal of Science*. 63:266-273.

**Author**

The primary author of this rule is Dr. Jeurel Singleton, Sacramento Endangered Species Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E-1823, Sacramento, California (916/978-4866 or FTS 460-4866).

**List of Subjects in 50 CFR Part 17**

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

**Regulation Promulgation****PART 17—[AMENDED]**

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "CRUSTACEANS", to the List of Endangered and Threatened Wildlife:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CRUSTACEANS							
Crayfish, Shasta (=placid) .....	<i>Pacifastacus fortis</i> .....	U.S.A. (CA) .....	NA .....	E .....	337 .....	NA .....	NA .....

Dated: September 22, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88-22399 Filed 9-29-88; 8:45 am]

BILLING CODE 4310-53-M

**50 CFR Part 17****Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Stephens' Kangaroo Rat**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** The Fish and Wildlife Service (Service) determines the Stephens' kangaroo rat (*Dipodomys stephensi*), a small mammal found in southern California, to be an endangered species. The species has suffered widespread habitat loss and degradation, resulting in small isolated populations. This rule implements the protection provided by the Endangered Species Act of 1973, as amended (Act), for the Stephens' kangaroo rat.

**DATE:** The effective date of this rule is October 31, 1988.

**ADDRESS:** The complete file for this rule is available for inspection, by appointment, during normal business hours at U.S. Fish and Wildlife Service, 24000 Avila Road, Laguna Niguel, California 92656.

**FOR FURTHER INFORMATION CONTACT:** Ms. Nancy M. Kaufman, field supervisor,

at the above address (714/643-4270 or FTS 796-4270).

**SUPPLEMENTARY INFORMATION:****Background**

The Stephens' kangaroo rat (*Dipodomys stephensi*) is a small mammal of the rodent family Heteromyidae. Like other kangaroo rats, it has a large head, external cheek pouches, elongated rear legs used for jumping, and relatively small front legs. The front feet are frequently used to hold seeds that the animal eats. There are five toes on the hind foot and the tail is 1.45 times the length of the head and body. The Stephens' kangaroo rat is distinguished from the sympatric agile kangaroo rat (*Dipodomys agilis*) by a lateral white tail band that is one half or less (rather than one half or more) times the width of the dorsal tail stripe, dusky (rather than dark) soles on the hind feet, a more grizzled appearance to the dorsal tail stripe due to many white hairs, a darker tail tuft due to fewer white hairs, a smaller ear (averaging 0.5 inch [15 millimeters] in length), and a relatively broad head. The average adult Stephens' kangaroo rat is 11 to 12 inches (277 to 300 millimeters) in length and weighs 2.3 ounces (67 grams) (Bleich 1977).

The Stephens' kangaroo rat was first described by Merriam (1907) as *Perodipus stephensi*. The type locality is the San Jacinto Valley, a little west of the town of Winchester, Riverside County. Grinnell (1921) placed the species in the genus *Dipodomys*. Huey (1962) described a kangaroo rat from the

San Luis Rey River valley as *Dipodomys cascus*. However, Lackey later (1967a) determined *D. cascus* to be a synonym of *D. stephensi*.

The Stephens' kangaroo rat is endemic to the Perris and San Jacinto Valleys in western Riverside County and the San Luis Rey and Temecula Valleys in northern San Diego County (Grinnell 1922, Lackey 1967a, O'Farrell and Uptain 1986, Thomas 1973). Occupied habitats are usually described as sparse, slightly disturbed coastal sage scrub or annual grassland. The actual distribution of suitable habitat is normally mixed with other habitat types in a natural mosaic. The populations with the highest densities have been found in areas where the herbaceous layer still contains California native annuals, and where perennial cover is less than 30 percent (Hogan 1981). The Stephens' kangaroo rat is most commonly associated with *Artemisia californica* and *Eriogonum fasciculatum* because these shrubs are often the most obvious elements of the habitat. The animal is actually using the herbaceous layer which is often dominated by filaree (*Erodium cicutarium*). Many areas supporting the species are shrubless (O'Farrell, 1988 pers. comm.). The Stephens' kangaroo rat occurs on level or low rolling terrain; it is not found on extremely hard or sandy soils (Lackey 1967a). Bleich (1977) noted that gravel is a common component of soils where the animal is found.

All of the occupied sites found by Thomas (1973) had been previously disturbed, usually by plowing. Remnant



populations that survived at the natural edges had reinvaded after the fields had been left fallow. At that time most populations were considered isolated from one another and were found predominantly in the western portions of the range. Rapid urbanization has reinforced this pattern.

Like all kangaroo rats, *D. stephensi* is nocturnal, spending the day in underground burrows and foraging on the surface at night. Pregnant and lactating females have been caught in the spring and summer months (Lackey 1967b). To date, few population density studies have been completed and none have covered an entire year. Relatively high densities (over 20 per acre or 50 per hectare) have been found during the summer months when the young are out of the nest (Thomas 1975). Hogan (1981) reported fall-winter densities of about 2.5 to 6 per acre (6 to 15 per hectare). According to Dr. Michael J. O'Farrell (private consultant, Santa Ynez, California), high density areas contain over 4 animals per acre (10 per hectare), moderate density areas support about 2 to 4 animals per acre (5 to 10 per hectare), and low density areas contain less than 2 per acre (5 per hectare). Most of the occupied range probably has low to moderate density populations.

Most remaining habitat for the Stephens' kangaroo rat is in private ownership. Federal agencies or installations with land holdings supporting this species include March Air Force Base, Fallbrook Naval Weapons Annex, Camp Pendleton Marine Corps Base, and the Bureau of Land Management. The Vista Irrigation District, Metropolitan Water District, and State of California also own comparatively large blocks of suitable habitat.

In its original Review of Vertebrate Wildlife, published in the *Federal Register* of December 30, 1982 (47 FR 58454-58460), the Service included *D. stephensi* in category 2, meaning that information then available indicated that a proposal to determine endangered or threatened status was possibly appropriate, but was not yet sufficiently substantial to support such a proposal. Subsequently, many new data on the species became available, and in its revised Vertebrate Review of September 18, 1985 (50 FR 37958-37967), the Service included *D. stephensi* in category 1, meaning that substantial information was on hand to support the biological appropriateness of proposing to list as endangered or threatened. The Service published the proposed rule for this species on November 19, 1987 (53 FR 44453-44456).

#### Summary of Comments and Recommendations

In the November 19, 1987, proposed rule (52 FR 44453-44456) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. The public comment period was extended twice, until April 19, 1988, to accommodate a requested public hearing held on March 11, 1988 (53 FR 5022), and again until June 20, 1988, to allow for the receipt of additional comments (53 FR 17964). Hence, the total comment period was 7 months. A newspaper notice was published in the *Los Angeles Times* on December 5, 1987, the *Riverside Press Enterprise* on December 17, 1987, and the *San Diego Union* on December 15, 1987, announcing the proposed rule and requesting comments. Announcements for the public hearing were published in the above newspapers on March 9, 1988. A total of 11 individuals and organizations submitted written comments. Two people provided oral testimony at the public hearing.

The only opposing statement was received from the U.S. Air Force, which was the only Federal agency to submit comments. The California Department of Fish and Game submitted supporting comments, and provided a copy of a recent status update. The cities of Moreno Valley and Riverside provided neutral comments and submitted information on the status of the species within their boundaries. One utility company and a water district also submitted neutral comments. One conservation organization, and two researchers also submitted supporting comments. Twelve individuals submitted signed photocopies of the same supporting letter, which were treated as one comment. Of the 11 comments received, 7 supported listing, 1 opposed, and 3 were neutral. The written and oral comments received are grouped under issues and discussed below:

**Issue 1:** The Stephens' kangaroo rat should not be listed as endangered until its range is more accurately delineated. The species may be more widespread than previously thought.

**Service Response:** The total range of the Stephens' kangaroo rat has been well documented (Bleich 1977, Lackey 1967a, Price and Endo 1988, Thomas 1973, Thomas 1975, O'Farrell and Uptain 1986). It is unlikely that this small mammal occurs outside of this range. The presence or absence of the Stephens' kangaroo rat at specific locations within this range is sometimes uncertain. Furthermore, the population

densities of this species fluctuate greatly from one year to the next (Price and Endo 1988), hence, suitable habitat may not always be occupied. The discussions under Factor A regarding habitat loss and Factor E regarding habitat fragmentation indicate that the threats facing the kangaroo rat are occurring range-wide. To wait until the species' occurrence is more precisely known would allow the present rate of habitat loss to continue unabated, making extinction of the species more likely.

**Issue 2:** Once the kangaroo rat is listed, the Federal and other public lands containing the species will become defacto reserves for this species. The Service may have "written-off" privately owned parcels for purposes of establishing Stephens' kangaroo rat reserves. All land owners should share in the burden of Stephens' kangaroo rat protection.

**Service Response:** The lands now held in public ownership are not sufficient to ensure the maintenance of the species in perpetuity. Consequently, the preservation of many presently privately owned parcels likely will be necessary. The Canyon Lake Property Owners Association has expressed interest in actions intended to preserve Stephens' kangaroo rat habitat. The County of Riverside has formed a committee to begin the development of a Habitat Conservation Plan for the kangaroo rat. A key feature of this program is to identify the best Stephens' kangaroo rat habitat in Riverside County for the establishment of viable reserves and develop the means to provide permanent protection and management for these sites. Many of the public parcels contain the species because the major public purpose of the land is at least partially compatible with preservation of the Stephens' kangaroo rat.

**Issue 3:** Many land uses appear to be compatible with the preservation of Stephens' kangaroo rats. For example, the species occurs along power line corridors, in grazed areas, at a solar facility, near napalm storage crates on military lands, and in areas where off-road vehicle travel has occurred.

**Service Response:** The habitat requirements of the Stephens' kangaroo rat are not well defined. The species does appear to need some bare ground, and the habitat is usually described as being open or sparsely vegetated. Consequently, land uses that cause artificial disturbance and perpetuate the sparse nature of the habitat may be compatible with the preservation of the species. However, further study is needed to determine which kinds of



disturbances under what circumstances truly are compatible. During a recent 1-year study (O'Farrell 1988, pers. comm.) noted a population increase of Stephens' kangaroo rats following development of a solar facility. The population change was attributed to increased protection from predators and increased herbaceous growth. Given that populations of this species fluctuate greatly from year to year (Price and Endo 1988), conclusions based on this short time period should be drawn conservatively. Thus, further careful study is needed to confidently assess the long-term impacts of various land uses on this species. Nevertheless, despite the fact that some land uses may be compatible, the primary threat to this species is permanent loss and fragmentation of habitat resulting from urbanization and other land uses.

**Issue 4:** In the proposed rule, it was suggested that some small land areas lacked viable populations; however, apparently this is not the case.

**Service Response:** The areas referred to were fairly small, approximately 40 acres (100 hectares) in size. As discussed below under Factor E, such small areas would support the species indefinitely. Although the population size that would be needed for viability is not known, it may contain 500 or more individuals. Additionally, on most lands supporting the species, not all habitat is suitable or occupied by Stephens' kangaroo rats; consequently, a viable population would more likely require several square miles. However, further study is needed to determine how many animals are needed for a viable population, and how much land they require.

In summary, no information was received indicating that the species is more widespread or under a lesser degree of threat than was originally thought.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Stephens' kangaroo rat should be classified as an endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in Section 4(a)(1). These factors and their application to the Stephens' kangaroo rat (*Dipodomys stephensi*) are as follows:

**A. The present or threatened destruction, modification, or curtailment of its habitat or range.** The habitat and range of the Stephens' kangaroo rat have been greatly reduced. The species probably once occurred through annual grassland or sparse coastal sage scrub communities of the Perris and San Jacinto Valleys and up adjoining washes in southern California. As the flatter plains were developed by people, however, the kangaroo rat became confined to isolated bases of low rolling hills and level ridge tops.

Price and Endo (1988) have completed a mapping effort focusing on suitable soil types and relatively flat topography to compare the amount of estimated habitat available to the Stephens' kangaroo rat prior to Twentieth-century agriculture and again in 1984 in Riverside County. Price and Endo (1988) estimated that approximately 308,195 acres (124,775 hectares) of potential habitat originally existed for this species. In 1984, 124,779 acres (50,518 hectares) remained. Habitat had been lost due to urban and agricultural developments. Moreover, of the remaining habitat patches, 84 percent were less than 1 square kilometer (384 acres) in size. Only 21,212 acres (8,588 hectares) remained in patches larger than one square kilometer (Price and Endo 1988). cursory observations indicate that since 1984, the situation has worsened. Most recent habitat loss is the result of urban development and is permanent; losses from agricultural development are less severe because Stephens' kangaroo rats can reinvade plowed fields following abandonment (Thomas 1973, 1975).

Some areas in public ownership contain substantial habitat for *D. stephensi*. O'Farrell and Uptain (1986) indicated that approximately 12,600 acres (5,100 hectares) of suitable habitat remain at Lake Henshaw and that another 4,940 acres (2,000 hectares) appear suitable on the Fallbrook Naval Weapons Annex. The species, however, probably has been extirpated between the latter facility and the San Luis Rey River. The Metropolitan Water District owns some habitat surrounding Lake Mathews where, including contiguous private parcels, an area of about 17,000 acres (6,800 hectares) remains, although not all of this habitat is suitable. Many proposed projects, however, threaten the land surrounding Lake Mathews.

No attempt to trap the species has been made at Lake Perris since 1973. On the east side of the San Jacinto Valley, it is now restricted mainly to insular patches at the edges of plowed fields. It is similarly restricted in the Lakeview Mountains, where only a few thousand

non-contiguous acres are now thought to contain adequate habitat. The species has been reported on the Beaumont-Banning Plain; however, this area is also undergoing rapid urbanization. The U.S. Bureau of Land Management (Bureau) owns some parcels near Lake Elsinore, but survival of the kangaroo rat there is tenuous because of rapid urbanization and an expected increase in casual human use (off-road vehicles already have been noted). Land exchanges are being pursued to consolidate these Bureau parcels to provide a viable preserve for the Stephens' kangaroo rat.

Further compounding the fragmented nature of the current distribution is the fact that the Stephens' kangaroo rat does not occupy all apparently suitable habitat (Friesen 1985a). Relatively large areas may include only a small percentage of occupied habitat. Grazing, off-road vehicle activity (common in southern California), and rodent control programs all potentially reduce habitat suitability.

These habitat losses are likely to continue. An examination of Riverside County's General Plan guidelines revealed that 78 percent of the sites where the kangaroo rat has been trapped are zoned for use incompatible with preservation of the species. Only 3 percent of the sites were zoned for vegetation or wildlife protection, and much of this land is not suitable for the kangaroo rat. Within the overall range of the Stephens' kangaroo rat, only 6 percent of the land is zoned for uses compatible with the preservation of the species. Because not all of the habitat in this 6 percent is suitable, much less is available for the kangaroo rat. Although biological consultants have sometimes located the species and informed appropriate land owners or project proponents, some of the sites, nonetheless, have been disked or plowed.

**B. Overutilization for commercial, recreational, scientific, or educational purposes.** Not now known to be applicable.

**C. Disease or Predation.** Not now known to be applicable. However, many areas of occurrence are adjacent to urban neighborhoods and increased predation from domestic and feral cats can be expected (Friesen 1985b).

**D. The inadequacy of existing regulatory mechanisms.** The California State Fish and Game Commission has listed the Stephens' kangaroo rat as threatened. Recently, the Department of Fish and Game recommended that the kangaroo rat's status be upgraded to endangered. The California Endangered Species Act (State Act) of 1985 provides



protection from take, and contains provisions that call for a consultation process, similar to Section 7 of the Federal Act, when a State lead agency's project may affect a State-listed species. The regulations implementing the consultation process under the State Act were not completed until June of 1986, and it is still unclear how effective the State Act will be. Few State agencies are expected to propose State projects as defined under the State Act. Under the California Environmental Quality Act, an attempt is made to "mitigate" for losses of occupied Stephens' kangaroo rat habitat. This procedure has been inadequate because the usual suggested "mitigation" measures presented in most proposed projects consist of preserving habitat in another location. There is thus a constant, ongoing habitat loss. Additionally, because the species does not occupy all suitable habitat, losses of unoccupied habitat remain uncompensated.

County zoning restrictions do not now provide adequate protection for the kangaroo rat and its habitat. Although "open space" designations are sometimes made, these can be altered to allow subdivision and development. Only a small fraction of the involved land is currently zoned for uses compatible with the preservation of the kangaroo rat (see "Factor A" above).

Federal lands form only a small part (approximately 15 percent) of the range of the species. Although a significant population of *D. stephensi* may occur on the Fallbrook Naval Weapons Annex, the Navy has no established policy regarding the protection of sensitive species. The involved Bureau of Land Management-administered lands are small and also lack specific protective policies, however, the Bureau does intend to consolidate some of its holdings through land exchanges and provide a reserve for the Stephens' kangaroo rat.

*E. Other natural or manmade factors affecting its continued existence.* Coastal sage scrub plant communities may become less sparse through time. As plant density and ground cover increase, patches of habitat would become unsuitable for Stephens' kangaroo rat.

The State recreation areas have rodent control programs that probably adversely affect the Stephens' kangaroo rat populations. Consultants also have noted the disappearance of kangaroo rat sign due to unknown causes. A hypothesis concerning such unexplained disappearances is that rodenticides have been used.

Further compounding the habitat loss and degradation referred to under

Factor A is the fragmented nature of the remaining habitat. Price and Endo (1988) have provided an estimate of original habitat and that available in 1984 based upon mapping of soil types. This effort has revealed approximately 84 percent of the remaining habitat patches are less than 1 square kilometer in extent. The size of a reserve that would be needed to support the Stephens' kangaroo rat in perpetuity is currently unknown; however, preliminary estimates indicate that it may be close to 6 square miles (1,536 hectares). Thus, most remaining habitat patches cannot be expected to support the species indefinitely.

Populations occupying fragments can be more easily extirpated from unpredictable natural catastrophes such as floods, fires, or disease outbreaks. Many of the habitat patches supporting the species are less than 10 acres (4 hectares) in size. Areas this small support such low numbers of Stephens' kangaroo rats that fluctuations in birth and death rates, unequal sex ratios, and loss of genetic diversity can be expected to adversely affect the survival of these populations.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based upon this evaluation, the preferred action is to list the Stephens' kangaroo rat as endangered. Threatened status would not adequately reflect the drastic habitat decline that already has occurred and the continued rapid habitat loss that is likely to occur in association with human activity. Although certain sites supporting the species receive some protection, these areas have management problems that could adversely affect the kangaroo rat. For the reasons given below, a critical habitat designation is not included in this rule.

#### Critical Habitat

Section 4(a) of the Endangered Species Act, as amended, requires that "critical habitat" be designated "to the maximum extent prudent and determinable," at the time a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent or determinable for *D. stephensi* at this time. For example, as discussed after factor "A" in the "Summary of Factors Affecting the Species," some landowners or project developers have disked or plowed their lands upon the discovery of this species. Populations in other areas have mysteriously disappeared following discovery, possibly from rodenticide use.

Prevention of take, as described in Section 9 of the Act, would be difficult to enforce under these circumstances. Publication of critical habitat descriptions and maps would likely make the species more vulnerable and increase enforcement problems. Affected parties and landowners will be notified of the location and importance of protecting this species' habitat. Protection of the species' habitat will be addressed through the recovery process and through the Section 7 jeopardy clause as described below.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, County, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or to destroy or adversely modify its critical habitat. If a proposed Federal action may affect a listed species, the responsible Federal agency must enter into formal consultation with the Service.

Several Federal actions may involve *D. stephensi*. The Bureau of Land Management owns several isolated parcels supporting the species (Hicks and Cooperrider 1975). The Bureau is interested in consolidating its land holdings within this area and has proposed that this effort could result in the formation of all or part of a reserve for this species. The Veterans Administration or Federal Housing Administration may finance housing loans in areas where the species now



occurs. The U.S. Army Corps of Engineers may permit or carry out flood control projects in sandy washes where the species has been found. The U.S. Air Force has proposed activities such as a housing development project on March Air Force Base which may involve the Stephens' kangaroo rat. The U.S. Marine Corps and U.S. Navy also own land that supports this species. To facilitate survival of the kangaroo rat on public lands, it would be necessary to carry out conducive management activities, such as preserving natural habitat where it now exists, conducting controlled burns to keep vegetation at the low densities favored by the species, and other activities.

The Act and implementing regulations found at 50 CFR 17.21, set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import, or export, ship in interstate or foreign commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities.

#### National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared

in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

#### References Cited

- Bleich, B.C. 1977. *Dipodomys stephensi*. Mammalian Species, Amer. Soc. Mamm., no. 73, 3 pp.
- Friesen, R.D. 1985a. Stephens' kangaroo rat study on a site northwest of Perris, Riverside County, California. For Ashley and Baker, Inc., Riverside County.
- Friesen, R.D. 1985b. Stephens' kangaroo rat study, Margarita Village (1,200 acre parcel) Rancho California, Riverside County, California. For Steve Nelson and Associates.
- Grinnell, J. 1921. Revised list of the species in the genus *Dipodomys*. J. Mamm. 9:94-97.
- Grinnell, J. 1922. The kangaroo rats of California. Univ. California Publ. Zool. 24:1-129.
- Hicks, D., and A. Cooperrider. 1975. Wildlife habitat inventory for the Stephens' kangaroo rat (*Dipodomys stephensi*). South Coast Border Resource Area, Riverside District Office, Bureau of Land Management.
- Hogan, D. 1981. Supplementary biological report, Lakeridge Estates, Stephens' kangaroo rat survey phases II and III. Prepared for Campeau Corporation, California.
- Huey, L.M. 1962. Two new species of broad-faced, five-toed kangaroo rats (genus *Dipodomys*). Trans. San Diego Soc. Nat. Hist. 12:477-480.
- Lackey, J.A. 1967a. Biosystematics of the *heermanni* group kangaroo rats in southern California. Trans. San Diego Soc. Nat. Hist. 14:313-344.
- Lackey, J.A. 1967b. Growth and development of *Dipodomys stephensi*. J. Mamm. 48:624-632.
- Merriam, C.H. 1907. Descriptions of ten new kangaroo rats. Proc. Biol. Soc. Washington 20:75-79.
- O'Farrell, M., and C. Uptain. 1986. An addition to the known range of Stephens' kangaroo rat, *Dipodomys stephensi*, in San Diego County, California. California Fish and Game Bull. 72:187-189.
- Price, M.V., and P.R. Endo. 1988. Estimating the distribution and abundance of a cryptic species, *Dipodomys stephensi* (Rodentia: Heteromyidae), and implications for management, University of California, Riverside, Unpublished Manuscript.
- Thomas, J.R. 1973. Stephens' kangaroo rat survey. California Dept. of Fish and Game, Final Rept. Fed. Aid Wildl. Restor. W-54-R, Spec. Wildl. Investig. Job II-5.6.
- Thomas, J.R. 1975. Distribution, population densities, and home range requirements of the Stephens' kangaroo rat (*Dipodomys stephensi*). Unpublished. Masters Thesis, California State Polytech, Univ., Pomona, CA.

#### Author

The primary author of this rule is Karla Kramer, U.S. Fish and Wildlife Service, 24000 Avila Road, Laguna Niguel, CA 92656 (714) 643-4270 or FTS 796-4270.

#### List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

#### Regulation Promulgation

#### Part 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 et seq.); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "Mammals," to the List of Endangered and Threatened Wildlife:

#### § 17.11 Endangered and threatened wildlife.

(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
Rat, Stephens' Kangaroo.....	<i>Dipodomys stephensi</i> .....	U.S.A. (CA).....	Entire.....	E	338	NA	NA



Dated: September 22, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88-22400 Filed 9-29-88; 8:45 am]

BILLING CODE 4310-55-M

## 50 CFR Part 17

### Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Sarracenia rubra* ssp. *jonesii* (Mountain Sweet Pitcher Plant)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

**SUMMARY:** The Service determines *Sarracenia rubra* ssp. *jonesii* (mountain sweet pitcher plant), a perennial insectivorous herb limited to 10 populations in North and South Carolina, to be an endangered species under authority of the Endangered Species Act of 1973, as amended (Act). *Sarracenia rubra* ssp. *jonesii* is endangered by drainage and other forms of habitat destruction and by collecting. This action will implement Federal protection provided by the Act for *Sarracenia rubra* ssp. *jonesii*.

**EFFECTIVE DATE:** October 31, 1988.

**ADDRESSES:** The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

**FOR FURTHER INFORMATION CONTACT:** Ms. Nora Murdock at the above address (704/259-0321 or FTS 672-0321).

#### SUPPLEMENTARY INFORMATION:

##### Background

*Sarracenia rubra* ssp. *jonesii* was first described by E.T. Wherry (1929) from material collected in North Carolina in 1920. The taxonomy of this genus is extremely complex, with extensive natural hybridization documented (Bell 1949, 1952). There has been substantial disagreement about the taxonomic classification of *Sarracenia rubra* ssp. *jonesii*, with different authors having treated it as a regional variant

(McDaniel 1971), a form (Bell 1949), a subspecies (Wherry 1972, Schnell 1977, 1978), and as a distinct species (Wherry 1929, Case and Case 1976, McDaniel 1986). If *Sarracenia rubra* ssp. *jonesii* is formally redescribed as a full species (as recommended in McDaniel's 1986 report) after it is added to the List of Endangered and Threatened Plants, an editorial change to the list will be made to reflect this nomenclatural change.

*Sarracenia rubra* ssp. *jonesii* is an insectivorous, rhizomatous, perennial herb, which grows from 21 to 73 centimeters tall. The numerous erect leaves grow in clusters and are hollow and trumpet-shaped, forming slender, almost tubular pitchers (inspiration for the most frequently used common name) covered by a cordate hood. The pitchers are a waxy dull green, usually reticulate-veined with maroon-purple. The tube of the pitchers is retrorsely hairy within and often partially filled with liquid and decayed insect parts. The uniquely showy and fragrant flowers have recurving sepals, are borne singly on erect scapes, and are usually maroon in color. The species blooms from April to June, with fruits developing in August (Massey *et al.* 1983, Wood 1960). Reproduction is by seeds or by fragmentation of rhizomes. *Sarracenia rubra* ssp. *jonesii* can be distinguished from other subspecies of *Sarracenia rubra* by its greater pitcher height, scape length equal to pitcher height, long petiole, abruptly expanded pitcher orifice, cordate and slightly reflexed hood, and petals and capsules, which are twice as large as those of other *Sarracenia rubra* (Massey *et al.* 1983, Sutter 1987, Wherry 1929).

Other common names of pitcher plants include trumpets, bugle-grass, bod-bugles, dumb-watches, watches, buttercups, Eve's cups, biscuit flowers, frog bonnets, fly bugles, and huntsman's cups (Wood 1960, Radford *et al.* 1964). The many common names are illustrative of the fascination generated by these unique organisms. The evolutionary role of carnivory in such plants as *Sarracenia rubra* ssp. *jonesii* is not fully understood, but some evidence indicates that absorption of minerals from insect prey may allow carnivorous species to compete in nutrient-poor

habitats (Folkerts 1977). Insects are attracted by nectar secreted from glands near the pitcher orifice, or by the plant's coloration, and fall or crawl into the pitchers. Just inside the mouth of the pitcher tube is a very smooth surface, offering no foothold to most insects; below this the pitcher is lined with stiff downward-pointing hairs which assist descent and virtually prevent ascent. Those insects which cannot escape are eventually digested by enzymes in the fluid secreted inside the pitchers.

*Sarracenia rubra* ssp. *jonesii* is a plant endemic to a few mountain bogs and streams in southwestern North Carolina and northwestern South Carolina along the Blue Ridge Divide. Twenty-six populations of *Sarracenia rubra* ssp. *jonesii* have been reported historically; 10 remain in existence. Four of these populations are in Henderson and Transylvania Counties, North Carolina, and six are in Greenville County, South Carolina. Eight of the remaining populations are located on privately owned lands, and two populations are located on public lands administered by the South Carolina Wildlife and Marine Resources Department and the South Carolina Department of Parks, Recreation, and Tourism. The continued existence of this species is threatened by drainage, impoundment, grazing and cultivation, natural succession, commercial and scientific collection, and development for recreational, residential, and industrial facilities.

Most of the remaining populations are extremely small, with some covering an area of less than 50 square feet. Any significant alteration of the hydrology of these sensitive sites could further jeopardize the species. The site owned by the South Carolina Wildlife and Marine Resources Department is protected. However, the other publicly owned site is part of the State parks system in South Carolina and is vulnerable to any significant increase in intensity of recreational use. The remaining eight sites in private ownership are vulnerable to destruction by habitat alteration or by taking of plants by amateur and professional collectors.



Federal government actions on this species began with Section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. The Service published a notice in the July 1, 1975, *Federal Register* (40 FR 27832) of its acceptance of the report of the Smithsonian Institution as a petition within the context of Section 4(c)(2) [now Section 4(b)(3)] of the Act and of its intention thereby to review the status of the plant taxa named within. *Sarracenia rubra* ssp. *jonesii* was included in the Smithsonian report and in the July 1, 1975, Notice of Review. On December 15, 1980, the Service published a revised Notice of Review for Native Plants in the *Federal Register* (45 FR 82480). *Sarracenia rubra* ssp. *jonesii* was included in that notice as a category-1 species. Category-1 species are those species for which the Service currently has on file substantial information on biological vulnerability and threats to support proposing to list them as endangered or threatened species. A revision of the 1980 notice that maintained *Sarracenia rubra* ssp. *jonesii* in category-1 was published on September 27, 1985 (50 FR 39526).

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, requires the Secretary to make certain findings on pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Sarracenia rubra* ssp. *jonesii* because of the acceptance of the 1975 Smithsonian report as a petition. In October of 1983, 1984, 1985, 1986, and 1987, the Service found that the petitioned listing of *Sarracenia rubra* ssp. *jonesii* was warranted but precluded by other listing actions of a higher priority and that additional data on vulnerability and threats were still being gathered.

On February 10, 1988, the Service published, in the *Federal Register* (53 FR 3901), a proposal to list *Sarracenia rubra* ssp. *jonesii* as an endangered species. That proposal constituted the final finding as required by the 1982 amendments to the Endangered Species Act.

#### Summary of Comments and Recommendations

In the February 10, 1988, proposed rule and associated notifications, all

interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting public comment were published in *The Times-News* (Hendersonville, North Carolina) and the *Greenville News* (Greenville, South Carolina) on February 20, 1988, and February 21, 1988, respectively.

Eight comments were received. Of these, six respondents expressed support for the proposal, including the Natural Heritage Program of the North Carolina Department of Natural Resources and Community Development; the Plant Conservation Program of the North Carolina Department of Agriculture; the South Carolina Nature Conservancy; a South Carolina chapter of the Sierra Club; and the U.S. Army Corps of Engineers, Wilmington District (Corps). Two comments were received which offered no new information and did not state a position on the proposal. The Corps indicated their intent to assert regulatory jurisdiction over the species' habitats, which would normally be covered under Nationwide Permit No. 26 (33 CFR 330.5(a)(26)). The Corps' response further stated that the listing of this species as endangered was not expected to significantly affect their regulatory activities in the area and stated the belief that, "... its listing will be an important step toward assuring its survival."

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Sarracenia rubra* ssp. *jonesii* should be classified as an endangered species. Procedures found at Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened due to one or more of the five factors described in Section 4(a)(1). These factors and their application to *Sarracenia rubra* ssp. *jonesii* Wherry (mountain sweet pitcher plant) are as follows:

#### A. The present or threatened destruction, modification, or curtailment of its habitat or range

Ten populations of *Sarracenia rubra* ssp. *jonesii* are known to exist in

Henderson and Transylvania Counties, North Carolina, and Greenville County, South Carolina. Sixteen other historically known populations have been extirpated due to drainage, impoundment, grazing and cultivation, collection, and development for recreational, residential, and industrial purposes. At least 2 of the remaining 10 populations have also been damaged to some extent by these activities. Only two of the extant populations are afforded some protection from human-induced habitat alterations; neither of these is protected from commercial or private collectors. Of the 16 populations that have been extirpated, at least 6 were eliminated by drainage of their habitat, 4 were flooded by impoundments, 3 were destroyed by construction of golf courses, 2 were eliminated by industrial development, and 1 was destroyed when its habitat was converted to agricultural use (Charles Moore, Brevard, North Carolina, personal communication, 1987; R. Sutter, North Carolina Plant Conservation Program, personal communication, 1987). Eight of the remaining 10 populations are currently threatened by habitat alteration. In some cases this takes the form of natural succession, with woody species encroaching onto the site, resulting in a drier, shadier habitat which is unsuitable for *Sarracenia rubra* ssp. *jonesii*. The area occupied by the species is rapidly developing as a center of tourism and, as such, is extremely vulnerable to continued and accelerated habitat destruction. Alteration of drainage patterns, unrestricted grazing of livestock, or development for residential/recreational or industrial purposes could further threaten the species if proper planning is not implemented.

#### B. Overutilization for commercial, recreational, scientific, or educational purposes

*Sarracenia rubra* ssp. *jonesii*, because of its rarity, is not currently a significant component of the commercial trade in native plants; however, pitcher plants in general are very attractive to the horticultural trade, and many species have been collected for sale and export for well over a century (Harper 1918). According to landowners and others (Craig Moretz, North Carolina State University, personal communication, 1987), collectors have removed plants as well as the entire seed crop from some populations in recent years, in spite of State legislation which makes this practice illegal. Publicity could generate an increased demand, which could



easily result in complete extirpation of some of the tiny remaining populations.

#### C. Disease or predation

Not applicable to this species at this time.

#### D. The inadequacy of existing regulatory mechanisms

*Sarracenia rubra* ssp. *jonesii* is afforded legal protection in North Carolina by North Carolina General Statutes, § 106-202.12 to 106-202.19 (Cum. Supp. 1985), which provides for protection from intrastate trade (without a permit), for monitoring and management of State-listed species, and prohibits taking of plants without written permission of landowners. *Sarracenia rubra* ssp. *jonesii* is listed in North Carolina as endangered-special concern—a category which allows for controlled sale of propagated plants. State prohibitions against taking are difficult to enforce and do not cover adverse alterations of habitat such as disruption of drainage patterns and water tables or conversion to agriculture or development. The species is recognized in South Carolina as endangered and of national concern by the South Carolina Advisory Committee on Rare, Threatened, and Endangered Plants in South Carolina; however, this State offers no statutory protection. Section 404 of the Federal Water Pollution Control Act could provide some protection for the habitat of *Sarracenia rubra* ssp. *jonesii*, particularly since the Corps has stated their intent to assert regulatory jurisdiction over sites occupied by the species (see "Summary of Comments and Recommendations" section); however, these sites will not be protected from habitat disturbance which does not involve the placement of fill on the site. The Endangered Species Act would provide additional protection and encouragement of active management where necessary for *Sarracenia rubra* ssp. *jonesii*.

#### E. Other natural or manmade factors affecting its continued existence

As mentioned in the "Background" section of this proposed rule, many of the remaining populations are small in numbers of individual stems and in terms of area covered by the plants. This, in addition to the rhizomatous nature of the species, indicates that little genetic variability exists in this species, making it more important to maintain as much habitat and as many of the remaining populations as possible. In some cases shrubs and trees threaten to invade this species' habitat, which could result in the elimination of *Sarracenia*

*rubra* ssp. *jonesii* by shading and desiccation. Since this type of succession is a relatively slow process, it is not considered an immediate threat to survival of the species at most sites. However, research and proper management planning for *Sarracenia rubra* ssp. *jonesii* is needed to address this aspect of the species' biology.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Sarracenia rubra* ssp. *jonesii* as endangered. With more than 60 percent of the species' populations having already been eliminated, and only 10 remaining in existence, it definitely warrants protection under the Act. Endangered status seems appropriate because of the imminent serious threats facing most populations. As stated by Folkerts (1977), "More than any other member of the genus, its future seems bleak and it needs immediate attention." Critical habitat is not being designated for the reasons discussed below.

#### Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for *Sarracenia rubra* ssp. *jonesii* at this time. With its history of illegal collection and the ongoing horticultural trade in pitcher plants, any increased publicity or provision of specific location information associated with critical habitat designation could result in increases of collecting pressures on the species. Many of the remaining populations, being extremely small, could be extirpated as a result. None of the remaining populations occur on lands under Federal jurisdiction; therefore, the Act's prohibition against removal and reduction to possession of endangered plants from such lands would not apply, and these populations would be completely vulnerable to collectors. Even without plant collection, increased visits to population locations stimulated by critical habitat designation could adversely affect the species through trampling of the plants and their sensitive habitat. The State agencies and private landowners involved in managing the habitat of this species have been informed of the plant's locations and of the importance of protection. Protection of the species'

habitat will be addressed through the recovery process and through the Section 7 jeopardy standard. Therefore, it would not be prudent to determine critical habitat for *Sarracenia rubra* ssp. *jonesii* at this time.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal activities that could impact *Sarracenia rubra* ssp. *jonesii* in the future include, but are not limited to, the following: road construction, permits for mineral exploration, permits for placing fill in wetlands, and any other activities that do not include planning for this species' continued existence. The Service will work with the involved agencies to secure protection and proper management of *Sarracenia rubra* ssp. *jonesii* while accommodating agency activities to the extent possible.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plants. All trade prohibitions of Section 9(a)(2) of the Act, implemented by 50 CFR 17.61, would



apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export any endangered plant, transport it in interstate or foreign commerce in the course of commercial activity, sell or offer it for sale in interstate or foreign commerce, or remove it from areas under Federal jurisdiction and reduce it to possession. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances. It is anticipated that some trade permits will be sought and issued, since this species is, to some extent, already a part of the commercial trade. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Washington, D.C. 20038-7329 (202/343-4955).

On June 6, 1981, *Sarracenia rubra* sp. *jonesii* was included (as *S. jonesii*) in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The effect of this listing is that both export and import permits are required before international shipment may occur. Such shipment is strictly regulated by CITES member nations to prevent it from being detrimental to the survival of the species and cannot be allowed if it is for primarily commercial purposes. If plants are certified as artificially propagated, however, international shipment requires only export documents under CITES, and commercial shipments may be allowed.

#### National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the

authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

#### References Cited

- Bell, C. 1949. A cytotoxic study of the Sarraceniaceae of North America. J. Elisha Mitchell Sci. Soc. 65:137-166.
- Bell, C. 1952. Natural hybrids in the genus *Sarracenia*.
- I. History, distribution, and taxonomy. J. Elisha Mitchell Sci. Soc. 68:55-80.
- Case, F., and R. Case. 1976. The *Sarracenia rubra* complex. Rhodora 78:270-325.
- Folkerts, G. 1977. Endangered and threatened carnivorous plants of North America. In Extinction is forever: the status of threatened and endangered plants of the Americas, ed. G.T. Prance and T.S. Elias; New York Botanical Garden, Bronx, NY. 301-313.
- Harper, R. 1918. The American pitcher-plants. J. Elisha Mitchell Sci. Soc. 34:110-124.
- Massey, J., D. Otte, T. Atkinson, and R. Whetstone. 1983. An atlas and illustrated guide to the threatened and endangered vascular plants of the mountains of North Carolina and Virginia. Gen. Tech. Rep. SE-20. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. 156-159.
- McDaniel, S. 1971. The genus *Sarracenia* (Sarraceniaceae). Bull. Tall Timbers Res. Stat. 9:1-36.
- McDaniel, S. 1986. Taxonomic study of three *Sarracenia* subspecies. Contract report for U.S. Fish and Wildlife Service, Atlanta, GA.
- Radford, A., H. Ahles, and C. Bell. 1964. Manual of the vascular flora of the Carolinas. UNC Press, Chapel Hill. 511-512.
- Schnell, D. 1977. Intraspecific variation in *Sarracenia rubra* Walter: some observations. Castanea 42:149-170.
- Schnell, D. 1978. *Sarracenia rubra* Walter: *intraspecific nomenclatural correction*. Castanea 43:260-261.
- Sutter, R. 1987. *Sarracenia jonesii* species account. North Carolina Plant Conservation Program. 4 pp.
- Wherry, E. 1929. Acidity relations of the *Sarracenia*. J. Wash. Acad. Sci. 19:379-390.
- Wherry, E. 1972. Notes on *Sarracenia* subspecies. Castanea 37(2):146-147.
- Wood, C. 1960. The genera of Sarraceniaceae and Droseraceae in the Southeastern United States. J. Arnold Arboretum (XLI):152-163.

#### Author

The primary author of this proposed rule is Ms. Nora Murdock, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259-0321 or FTS 672-0321).

#### List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

#### Regulation Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

#### PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under the family Sarraceniaceae, to the List of Endangered and Threatened Plants:

#### § 17.12 Endangered and threatened plants.

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(h) \* \* \*



Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
SARRACENIACEAE—Pitcher plant family:						
<i>Sarracenia rubra</i> ssp. <i>Jonesii</i> (= <i>Sarracenia jonesii</i> ).	Mountain sweet pitcher plant	U.S.A. (NC, SC)	E	339	NA	NA

Dated: September 22, 1988.  
 Susan Recce,  
 Assistant Secretary for Fish and Wildlife and  
 Parks.  
 [FR Doc. 88-22401 Filed 9-29-88; 8:45 am]  
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